for a surgical abdominal lesion might have resulted in a laparotomy. As it was, the prognosis given to the patients' relatives was rather more than guarded. Case 2 was obviously not a surgical case a week after admission. Being wise after the event, it seems strange that this case was not diagnosed, and reference to the case histories of other patients admitted to medical wards with the same condition suggests that correct diagnosis was not impossible.

Summary

Patients with aortic dissecting aneurysms are sometimes admitted into surgical wards.

A brief summary is given of the pathology, symptoms, and signs of this condition.

Three case histories are given, in two of which a correct antemortem diagnosis was made.

It is suggested that a correct diagnosis could be made more often.

Free reference has been made to the excellent symposium on the subject by Shennan (1934).

REFERENCES

Moosberger, W. (1924). *Schweiz. med. Wschr.*, **54**, 327.
Moriani, G. (1910). *Virchows Arch.*, **202**, 283.
Shennan, T. (1934). *Spec. Rep. Ser. med. Res. Coun., Lond.*, No. 193.
Tessier, C. P. (1842). *G. Sci. med.*, **14**, 318.

LIQUOR PICIS CARBONIS (B.P.)

A CARCINOGENIC AGENT

BY

I. BERENBLUM, M.D., M.Sc.

(From the Oxford University Research Centre of the British Empire Cancer Campaign, Sir William Dunn School of Pathology, University of Oxford)

From our knowledge of occupational tumours in man and from results of animal experiments, coal-tar must be considered among the most potent carcinogens for skin epithelium. Possible dangers arising from its incorporation in therapeutic preparations for dermatological use cannot, therefore, be ignored.

In the early studies of experimental carcinogenesis several investigators (Sternberg, 1923; Lipschütz, 1924; Berghoff, 1928) examined a number of tar-containing therapeutic preparations in use on the Continent and found these to be carcinogenic for mouse's skin. The preparations tested were carboneol (a solution of coal-tar in carbon tetrachloride), lithanthrol (a solution in ethyl chloride and ethanol), and carboterpin (a solution in a mixture of terpenes).

The corresponding preparation in use in this country is liquor picis carbonis (*B.P.*), which consists of a 20% solution of coal-tar in ethanol. In view of its wide use in dermatological practice an experimental investigation of its carcinogenic properties was thought desirable. (This was suggested by Dr. J. R. Squire, of the M.R.C. Industrial Medicine Research Unit, Birmingham Accident Hospital, and by Dr. E. H. Capel, late medical officer to Joseph Lucas Ltd., Birmingham.)

Carcinogenicity Tests on Mouse's Skin

Twelve white mice were painted twice weekly for 41 weeks with undiluted liquor picis carbonis (*B.P.*) on a small area of skin in the interscapular region. Papillomas appeared in the treated areas of skin in seven out of the 12 mice after the following intervals (counted from the beginning of applications): 10, 17, 18½, 25, 25½, 26, and 40 weeks, respectively. Thus the 50% tumour yield was reached in 26 weeks, representing a carcinogenic potency (Berenblum, 1945a) of Grade VII. This potency is comparable to that of cholanthrene, and is higher than that of 1:2:5:6-dibenzanthracene.

Of the seven mice with tumours, four subsequently developed malignant growths, which were found histologically to be all squamous carcinomas with atypical growth and local invasion. There were no metastases.

Benzpyrene Content

Although 3:4-benzpyrene—the potent carcinogen originally isolated from tar (Cook, Hewett, and Hieger, 1933)—is not the only carcinogen present in tar (Berenblum and Schoental, 1947), the fact that it can be identified with ease by fluorescence spectrography (Hieger, 1930) and its concentration in complex mixtures readily estimated (Berenblum and Schoental, 1943) made it desirable to determine the benzpyrene content of liquor picis carbonis.

Using the method of estimation of Berenblum and Schoental (1943), the preparation was found to contain 0.02% of benzpyrene, thus representing a 0.1% concentration in the tar itself (since the pharmaceutical preparation in question is a 20% solution of tar in ethanol). This value of 0.1% is much lower than that found in many of the carcinogenic tars previously tested (Berenblum, 1945b). It would seem, therefore, that benzpyrene accounts for only a small part of the high carcinogenic potency of the preparation observed in the biological tests.

Discussion

The observation that liquor picis carbonis (*B.P.*) possesses a pronounced carcinogenic action on mouse's skin accords well with the earlier tests on tar-containing pharmaceutical preparations in use in dermatological practice on the Continent (Sternberg, 1923, etc.). This raises the important question whether its clinical use is not without danger to the patient.

The crux of the problem is no doubt the length of time the patient is exposed to such potentially carcinogenic action. It may well be that no significant danger is associated with its use in short-term treatments. On the other hand, in the case of chronic skin diseases of various types, for which applications of liquor picis carbonis are often continued for many years, the possibility of a late carcinogenic effect may be a real one. Probably the most serious hazard may arise from its continued use by the patient without medical supervision, to alleviate, for instance, some of the recurrent symptoms of occupational dermatitis in industry.

The true hazard, however, can be assessed only by a clinical follow-up of all patients submitted to this form of treatment. In the meantime, avoidance of *long-continued* application of liquor picis carbonis would be a wise precaution.

Summary

Liquor picis carbonis (*B.P.*), as used in dermatological practice, has been found to possess carcinogenic activity when painted on mouse's skin.

The clinical implications of this finding are discussed.

REFERENCES

Berenblum, I (1945a). *Cancer Res.*, **5**, 561.
—— (1945b). *Nature*, **156**, 601.
—— and Schoental, R. (1943). *Brit. J. exp. Path.*, **24**, 232.
—— —— (1947). *Brit. J. Cancer*, **1**, 157.
Berghoff, W. (1928). *Z. Krebsforsch.*, **26**, 468.
Cook, J. W., Hewett, C. L., and Hieger, I (1933). *J. chem. Soc.*, 395.
Hieger, I. (1930). *Biochem. J.*, **24**, 505.
Lipschütz, B. (1924). *Z. Krebsforsch.*, **21**, 50.
Sternberg, A. (1923). Ibid., **20**, 420.